Space Weather Forecast

Issued on Monday, 14 August 2023 at 01:24 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

Space Weather Forecast Headline: Chance of G1/Minor Storm, mainly day 2 (15 Aug). Chance of isolated M-flares (R1 Blackouts).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Low with only common class flares observed. The largest of these was from a small and weakening, but previously complex, sunspot region on the northwest disc. Of the six numbered regions on the disc, the main development was with a new spot emerging in the northeast, rapidly growing to be a moderately sized region. This still has with ongoing consolidation of its small spots, but is settling into a larger but simple bipolar configuration. The other two notable regions include a simple and stable bipolar spot in the northwest and the mature and stable unipolar spot now approaching the southwest limb. There were no Earth-directed CMEs (coronal mass ejections).

Solar Wind / Geomagnetic Activity: Solar wind speeds eased to background, from 400 km/s to around 350 km/s. Total interplanetary magnetic field (IMF) was weak, with the north-south component also varying weakly. Geomagnetic activity was Quiet (Kp 1-2)

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) persisted at background levels with no solar radiation storms occurring.

Four-Day Space Weather Forecast Summary

Solar Activity: Mainly Low activity is expected, but with a daily chance of rising to Moderate with isolated Moderate flares.

Solar Wind / Geomagnetic Activity: There are no Earth-directed CMEs. Fast winds from a coronal hole on the northern disc are anticipated to arrive either later day 1 or more likely day 2 (14-15 Aug), with solar winds likely rising to around 500-600km/s. Further enhancements are possible day 3 (16 Aug) from a southern disc coronal hole, however this is low confidence. Initially Quiet geomagnetic activity is expected to become Unsettled to Active with a likelihood of G1/Minor Storm intervals, either late day 1 or day 2 (14-15 Aug). Activity then easing to Unsettled to Active, but with an ongoing slight chance of G1 Minor Storm intervals day 3 and 4 (16-17 Aug).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is currently forecast to persist at background levels with no solar radiation storms occurring.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	30	60	20	10
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	30	40	40	40
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	2	2	2	2
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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